

REMARKS

This application has been reviewed in light of the Office Action dated February 8, 2008. Claims 2-10, 13-15, 18, 20-28, 31-33, 36, and 41-46 are presented for examination. Claims 9, 10, 13, 15, 41, 42, 43, 44, 45-46, 20-28, 31-33, and 36 have been amended to define more clearly what Applicants regard as the invention. Claims 41-46 are in independent form. Favorable reconsideration is requested.

The Specification was objected to as failing to provide proper antecedent basis for the claim term “computer readable medium.”

The Specification has been amended to recite “a method, system and a computer-readable storage medium storing computer-executable instructions for query interpretation that uses a combination of context-independent and contextual evaluation to compute interpretations for multiple-term queries” (Page 1, Paragraph 10).

Applicants respectfully submit that no new matter has been introduced with this amendment. Claim 19, as originally filed, recited “[a] computer program product, residing on a computer readable medium.” One of ordinary skill in the art would recognize that this encompasses “a computer-readable storage medium storing computer-executable instructions.” Accordingly, withdrawal of the objection is respectfully requested.

Claims 27 and 28 were objected to as being dependent from a cancelled claim. Claims 27 and 28 have been amended to depend from independent Claim 45. Accordingly, withdrawal of the objection is respectfully requested.

Claims 45-46, 20-28, 31-33, and 36 were rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Specifically, the Examiner contends that “the computer readable medium on which the computer program product resides includes signals, which are not statutory subject matter.” (Office Action at page 3).

Without conceding the propriety of this rejection and solely to expedite prosecution, Claims 45 and 46 have been amended to recite “A computer readable storage medium storing computer-executable instructions” The claims depending from Claims 45 and 46 have been

amended in a consistent manner. As such, Claims 20-28, 31-33, and 36 clearly are directed to a storage medium, which is a “manufacture” in the sense of 35 U.S.C. § 101, and therefore are directed to statutory subject matter:

[A] process, machine, manufacture, or composition of matter employing a law of nature, natural phenomenon, or abstract idea is patentable subject matter even though a law of nature, natural phenomenon, or abstract idea would not, by itself, be entitled to such protection.

State Street Bank & Trust Co. v. Signature Financial Group Inc., 47 USPQ2d 1596, 1601 (Fed. Cir. 1998). Accordingly, reconsideration and withdrawal of the rejection of Claims 45, 46, 20-28, 31-33, and 36 is respectfully requested.

Claim 8 was rejected under 35 U.S.C. § 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. Claim 8 recites, *inter alia*, “using a measure of a number of terms in the first candidate multiple-term interpretation that are in the set of associated items is a dominant factor in determining the contextual score.”

The Specification, for example, in paragraph 72 provides an example of the use of a measure of a number of terms in the first candidate multiple-term interpretation that are in the set of associated items as a dominant factor determining the contextual score:

In some embodiments, the **number of terms from a candidate multiple-term interpretation** matched in the **items in the result set** or some other information measure reflective of the semantic approach used may be the **dominant factor in determining the contextual score**. For example, in an embodiment in which partial matching can be used to determine a **contextual score** for a candidate multiple term interpretation, a rule can be implemented such that combinations that match a **maximal number of terms** in the candidate multiple-term interpretation are preferred over those that match fewer terms but return more associated results in the database.

Therefore, according to this example, a contextual score for a candidate multiple term interpretation can be determined by using a measure of a number of terms (i.e., combinations

that match a maximal number of terms) as a dominant factor (i.e., these are preferred over those that match fewer terms but return associated results in the database). It is respectfully submitted that one of ordinary skill in the art would understand the metes and bounds of Claim 8 in view of this example and in view of the plain meaning of the term “dominant.”

Claims 41, 43, 45, 2-10, and 20-28 were rejected under 35 U.S.C. § 103(a) as obvious under U.S. Patent No. 6,424,983 (“Schabes”), in view of U.S. Patent No. 5,724,571 (“Woods”), and further in view of U.S. Patent No. 6,006,225 (“Bowman”). Claims 42, 44, 46, 13-15, 18, 31-33, and 36 were rejected under U.S.C. § 103(a) as obvious under Schabes, in view of U.S. Patent No. 5,671,404 (“Lizce”), and further in view of Bowman.

Generally speaking, the claimed subject matter relates to methods of interpreting multiple-term queries, by identifying single- and multiple-term interpretations for the query terms, where the contextual score of a multiple-term interpretation is based at least in part on the number of matching items in the database being searched associated with the interpretation.

For example, Claim 41 recites, *inter alia*, identifying a plurality of candidate multiple-term interpretations, providing a plurality of semantic approaches for associating a candidate multiple-term interpretation with items in the database and determining a contextual score for each candidate multiple-term interpretation based at least in part on the quantity of items associated with each respective candidate multiple-term interpretation in the database being searched.

Schabes relates to a spelling and grammar checking system which generates lists of alternative words for misspelled or grammatically-incorrect words in a sentence. (Abstract). A spell-checking module compares each word in the input text to a dictionary database and characterizes a word as misspelled when it does not match any words in the dictionary database. The misspelled words are passed to a spelling suggestion module, which suggests corrections for the misspelled words based on inserting, deleting, replacing, and/or transposing characters in the misspelled word until correctly-spelled alternative words are obtained. (Col. 8, lines 43 – col. 9, line 2). A contextual ranking module ranks the alternative words “in accordance with one or more of a plurality of predetermined grammatical rules.” (Col. 10, lines 3-9; col. 17, line 62 – col. 18, line 20; Fig. 13).

As the Office Action acknowledges, Schabes does not teach or suggest providing a plurality of semantic approaches for associating a candidate multiple term interpretation with items in a database, determining a quantity of items in the database being searched associated with each respective candidate multiple term interpretation acceding to each of said semantic approaches, as recited in Claim 41. Nor does Schabes teach or suggest, according to the Office Action, determining a contextual score for each candidate multiple-term interpretation based at least in part on a quantity of items associated with each respective candidate multiple-term interpretation in the database being searched, selecting at least one candidate multiple-term interpretation based on its score and retrieving at least one item from the database using the selected candidate multiple-term interpretation, as further recited in Claim 41. Rather, as discussed above, the system described in Schabes employs predetermined grammatical rules to perform contextual ranking.

Woods relates to the generation of responses to queries in a document retrieval system. The method locates compact regions ("hit passages") within a document that match a query to some measurable degree, such as by including terms that match terms in the query to some extent, and ranks them by the measured degree of match. The ranking procedure, referred to as "relaxation ranking", ranks hit passages based upon the extent to which the requirement of an exact match with the query must be relaxed in order to obtain a correspondence between the submitted query and the retrieved hit passage. The relaxation mechanism takes into account various predefined dimensions (i.e., measures of closeness of matches), including: word order; word adjacency; inflected or derived forms of the query terms; and semantic or inferential distance of the located terms from the query terms. The ranking is weighted to a substantial extent based upon the physical distance separating the matching terms (compared with the distance between the corresponding terms in the query), as well as the "similarity" distance between the terms in the hit and the corresponding terms in the query. The located passages are ranked based upon scores generated by combining all of the weighted criteria according to a predetermined procedure. "Windows" into the documents (i.e., variably sized regions around the located hit passages) are presented to the user in an order according to the resulting ranking. (Col. 2, line 28 – col. 3, line 2).

Woods is concerned with ranking retrieved documents based on individual document scores and does not disclose scoring a multiple-term query. Therefore, it follows that Woods, taken alone or in combination with Schabes, does not teach or suggest determining a contextual score for candidate multiple-term interpretations based at least in part on a quantity of items in the database being searched associated with each respective candidate multiple-term interpretation, as recited in Claim 41.

The Office Action states that Woods discloses “scoring hits in a database by considering term proximity in a hit document based on the query, thus producing a contextual score for each query based on a semantic approach.” (Office Action at page 14). It is respectfully submitted that this characterization is inaccurate, because Woods does not teach or suggest any way of combining a set of scores obtained from individual database items to determine a score for the query itself. Thus, the scores obtained in Woods are indicative of how well each individual retrieved item matches the query, rather than a reflection of the effectiveness of the query.

Bowman relates to a search engine which suggests related terms to allow a user to refine a search. The related terms are generated using query term correlation data which reflects the frequencies with which specific terms have previously appeared with the same query terms, i.e., the frequency with which the related terms have appeared with the user’s query terms in prior searches done by other users. The correlation data is generated and stored in a look-up table using an off-line process which parses a query log file. (Abstract).

The Examiner asserts that “Bowman discloses determining a quantity of items associated with respective candidate multiple term interpretations,” and that “Bowman selects a candidate multiple term interpretation based on its score” (Office Action at page 6). However, to the extent that there is any ranking or scoring of query terms in Bowman, it is based on the number of times the terms have appeared in previous queries, rather than the number of associated items in the database being searched. Solely to expedite prosecution, Claims 41 – 46 and their dependent Claims have been amended to recite “in the database being searched,” even though Applicants believe that this was already implicit in the claims. Applicants do not view this as a narrowing of the claims or as necessary to overcome the prior art, but make this amendment to foreclose a seemingly erroneous interpretation by the Examiner.

Thus, the method disclosed in Bowman differs substantially from a method in which a contextual score for each candidate multiple-term interpretation is determined based on a quantity of associated items in the database being searched, as recited in Claim 41. To illustrate this difference with an example, if there is only one book available on Amazon.com about unicorns, but users frequently use the term “unicorns” in queries, then the term “unicorns” will be highly ranked, even though there is only one book on this subject in the database.

Furthermore, Bowman handles multiple-term queries as follows:

For multiple-term queries, the selection process 139 obtains the related terms lists 142 for each of the query terms, and then takes the intersection of these lists. FIG. 8B illustrates the related term results for a multiple-term query in the subject field of “OUTDOOR TRAIL” using the mapping from FIG. 5B. The selection process 139 would look up the key terms “S-OUTDOOR 560 and “S-TRAIL” 570 and see if they have any related terms in common. In the mapping, the related terms “S-BIKE,” “S-SPORTS,” and “S-VACATION” are found under the key terms “S-OUTDOOR” 560 and “S-TRAIL,” 570; thus “S-BIKE,” “S-SPORTS,” and “S-VACATION” are the intersecting terms 820 as illustrated in FIG. 8B. The selection process 139 would then display the X intersecting terms with the same prefix and the X highest summed correlation scores.

(Bowman at col. 13, lines 24-38). It is clear from the above that Bowman does not score the multiple term query “outdoor trail.” Rather, there is merely a selection of possibly-related terms from an intersection set of terms frequently used with the individual terms “outdoor” and “trail” in previous queries. In fact, Bowman does not teach or suggest scoring of multiple term queries at all, much less contextual scoring based on a quantity of items in the database being searched, as recited in Claim 41.

It is therefore respectfully submitted that neither Woods nor Bowman remedies the shortcomings of Schabes with respect to the claimed features discussed above. Accordingly, these references, no matter how they hypothetically may be combined, do not teach or suggest all of the features of Claim 41.

For at least the above reasons, Claim 41 is believed to be patentable over the combination of Schabes, Woods, and Bowman.

Claims 42-46 recite similar features to those discussed above with respect to Claim 41 and therefore are also believed to be patentable over the combination of Schabes, Woods, and Bowman.

A review of the other references cited above has failed to reveal anything which, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as references against the independent claims herein. Those claims are therefore believed patentable over the art of record.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual consideration or reconsideration, as the case may be, of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Please charge any fees that may be due, or credit any overpayment of the same, to Deposit Account No. 08-0219. The Examiner is encouraged to telephone the undersigned attorney for the Applicant to resolve any outstanding issues.

Respectfully submitted,

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